Area-Wide Nematode Survey
Many Species of Nematodes of Concern in Crops

Central Science Laboratory, Harpenden Archives, British Crown, www.ipmimages.org

Internal damage to tuber caused by *Ditylenchus destructor*.

Nematodes may cause significant reductions in crop yields, impacting virtually all crops. The nematodes surveyed for are of regulatory significance and could negatively impact our agricultural export markets.

The MDA collected 111 soil samples throughout Big Horn, Carbon, Cascade, Dawson, Gallatin, Lewis & Clark, Pondera, Teton, and Yellowstone Counties. Crops represented in the samples included alfalfa, barley, beans, beets, corn, fallow, pasture, peas, potatoes, and wheat.

Soil was screened for thirty five nematodes species, sixteen species of regulatory concern, and nineteen other plant-parasitic genera, including: *Globodera rostochiensis, Globodera pallida, Ditylenchus destructor, Ditylenchus dipsaci, Meloidogyne chitwoodii, Meloidogyne falax, Meloidogyne hapla, Meloidogyne javanica, Meloidogyne artiellia, Nacobbus aberrans, Heterodera glycines*, and *Paratrichodorus* species. There were no nematodes of regulatory concern found in the survey.

While this information is important for Montana farmers in their management schemes, it will also allow Montana crops to be certified as from areas free from some of these organisms, which allows greater access to overseas markets.

Bonsak Hammeraas, Norwegian Institute for Agricultural and Environmental Research, www.ipmimages.org

Final Report of the Survey of White Potato Cyst Nematode
Globodera pallida

Cooperative Agriculture Pest Survey Contract Number: 07 -30-CAPS-003

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A. Plan of Action

Surveys were conducted in those counties with potato crops identified as economically important to Montana's export markets. These counties are Beaverhead, Blaine, Broadwater, Chouteau, Deer Lodge, Flathead, Gallatin, Jefferson, Lake, Madison, and Powell.

Seed potatoes in a field in Montana.

B. Detail

Samples were collected using the APHIS Piler Dirt Sampling Methodology, Field Size vs. Number of Samples. Soil was collected from under processing conveyors in the storage area when potatoes were shipped from storage.

Each sample consisted of 5 pounds of soil. Data collected included Date of collection, Collector, Potato Variety, Seed Generation, and Field Number. Personnel from the Montana State University Potato Laboratory, including Susie Siemsen, Eileen Carpenter, Elaine Nichols and Mike Sun gathered the samples for storage and processing at the MSU campus.

Elaine Nichols, Susie Siemsen, and Eileen Carpenter of the Montana Potato Laboratory.

Susie Siemsen was responsible for data collection and sample security. She compiled a record of all samples collected, as well as their data, which was submitted to the Montana Department of Agriculture.

C. Methods

A total of 2,652 samples were collected.

Eileen Carpenter was responsible for soil processing and cyst extraction. Soil was processed using USDA Soil Extractors.

The USDA soil extraction process at work.

Examination of the samples was done by Mike Sun, PhD. Dr. Sun is trained in Nematology at North Carolina State University, with additional training for this survey at Oregon State University (Dr. Russell Ingham), and at the Cyst Extraction laboratory in Twin Falls and Idaho Falls, ID). The examinations were done using two stereoscopic microscopes, connected to a computer, using Motic Images Plus, Version 2.0 ML, to capture images and record the size of each cyst. Using two systems allowed for rapid processing of the samples.

Dr. Mike Sun is the leader of the Montana State University Potato Laboratory.


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D. Results

All Montana seed potato growers took place in this survey. All of the samples (2,652) were examined. No cysts of *Globodera* were found (Table 1).

County	No. Farms Sampled	No. Cellars Sampled	No. Samples	No. Acres Seed Potatoes	No. Suspect Cysts	No. Confirmed Cysts
Beaverhead	3	3	311	949.28	0	0
Blaine	1	1	7	21.95	0	0
Broadwater	4	3	162	997.80	0	0
Chouteau	1	1	61	212.00	0	0
Deer Lodge	1	1	0	219.80	0	0
Flathead	1	1	77	267.96	0	0
Gallatin	26	26	1303	3925.60	0	0
Jefferson*	1	0	0	45.00	0	0
Lake	12	12	581	2107.70	0	0
Madison	7	5	108	727.40	0	0
Madison (Greenhouse)**	-	-	5	-	0	0
Powell*	1	0	37	53.30	0	0
Total	58	53	2652	9527.79	0	0

*Jefferson and Powell County potatoes are stored in Gallatin and Deer Lodge Counties, respectively.
**Five samples were taken from greenhouses in Madison County.

Additional Nematode Notes From the Montana Department of Agriculture

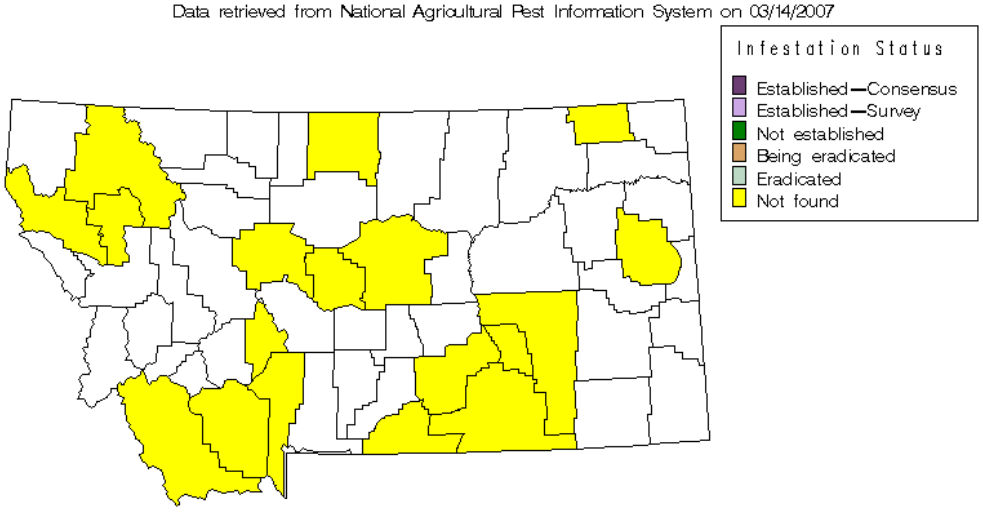
Because *Globodera pallida* is of extreme export significance to Montana farmers, results from the 2006 general nematode sampling (which included *G. pallida*) are included here. These samples were not all from potato fields; instead, they represent the results of sampling in several crops. Also of note here: These same fields were sampled for *Globodera rostochiensis*, another nematode with significant export implications. There were no positive finds for that nematode either. The processing of these samples was done by Dr. Tom Powers, University of Nebraska.

This information allows the Montana Department of Agriculture and the USDA APHIS PPQ to certify that certain crops from Montana are from the areas that have been tested and found free of the nematodes, which makes it easier to export them in many cases.

2006 Nematode Survey Results

County	Samples Collected	Results	
		G. pallida	***G. rostochiensis***
Beaverhead	8	Negative	Negative
Big Horn	7	Negative	Negative
Broadwater	6	Negative	Negative
Cascade	1	Negative	Negative
Carbon	16	Negative	Negative
Daniels	10	Negative	Negative
Dawson	4	Negative	Negative
Fergus	3	Negative	Negative
Flathead	3	Negative	Negative
Gallatin	23	Negative	Negative
Hill	3	Negative	Negative
Judith Basin	1	Negative	Negative
Lake	9	Negative	Negative
Lewis and Clark	1	Negative	Negative
Madison	1	Negative	Negative
Rosebud	2	Negative	Negative
Sanders	2	Negative	Negative
Treasure	2	Negative	Negative
Yellowstone	8	Negative	Negative
Total	110		

Data retrieved from National Agricultural Pest Information System on 03/14/2007



The Center for Environmental and Regulatory Information Systems does not certify the accuracy or completeness of the map.
Negative data spans over last 3 years only.